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## A REVIEW OF THE NORTH AMERICAN SPECIES OF AGATHIDIUM (COLEOPTERA; SILPHIDAE)

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A recent critical survey of the *Agathidium* material in my collection has revealed the presence of a considerable number of undescribed species. There is nothing surprising in this fact when it is recalled that the last published treatment of the genus was that of Dr. Horn in his Silphidae paper of more than fifty years ago. Since that time only four additional species have been described, viz: *A. virile* Fall (Occ. Papers Cal. Acad. Sci. VIII, 1901), and *A. maculosum* (1928), *A. canadensis* (1930), and *A. conjunctum* (1933) by W. J. Brown, all in the Canadian Entomologist.

While the chief incentive to the present paper has been to make known the new species that have come to my attention, it has been thought best in the interest of completeness to amplify the work by including short descriptions or pertinent notes on the old species as well, and to prepare a new tabular synopsis of all our known fauna.

The various external structural modifications within the genus are in the main accurately noted and sufficiently described by Horn in his preliminary remarks. It should be said however that the membranous border of the clypeus is subject to individual variation, at least in some species, and in an extreme case has been observed to be either distinct or apparently lacking in different examples of the same species.

That Horn was not very assiduous in his search for external sexual characters is evident from his statement that "sexual char-

acters other than those found in the tarsi do not occur except in *dentigerum*." As a matter of fact such characters are almost universally present. A very common sexual mark is the presence of a bristle bearing fovea or erosion on the metasternum of the male. This structure however is sometimes very small and inconspicuous and in general would be quite concealed by the usual type of mounting, and hence easy to overlook.

In the pursuance of my investigation I have carefully studied at the Museum of Comparative Zoology in Cambridge the types and other material in the Le Conte collection, which includes also types or typical examples of several of Mannerheim's species; also the Blanchard and Bowditch collections now contained in the same museum. The Blanchard collection, always notable for the condition and careful mounting of its specimens, deserves especial mention in that it furnished no less than four undescribed species in this genus, all of which were taken by Blanchard himself in the White Mts., in New Hampshire.

To Mr. Chas. Liebeck, of Philadelphia, I am again indebted for valuable notes on certain of the Horn types and for the opportunity of studying his entire *Agathidium* material; moreover he has most kindly allowed me to retain the types of three new species contained in his cabinet. For aid in the way of specimens or information I am very grateful to a number of correspondents, notably Mr. C. A. Frost and Mr. Henry Dietrich: acknowledgment of such will be made in the proper places.

All types of new species are in the writer's collection unless otherwise stated.

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| Sutural stria very fine, confined to the apical  |   |

third of the elytra; size large (3 to 4 mm.); color black when mature. (Eastern U. S.).  
*oniscoides* Beauv.

Sutural stria slightly longer but rather feebly developed; size small, a little over 2 mm. (fully extended); color reddish brown. (North Carolina).....**rubellum** n. sp.

Sutural stria wanting; piceous; length 2.5 mm. (extended). (North Carolina; New Hampshire).....**compressidens** n. sp.

*bb.* Sutural stria extending fully to the middle of the elytra, average length about 2 mm.

*exiguum* Melsh.

*aa.* Third antennal joint not or barely perceptibly longer than the second; sutural stria wanting.

Form very convex; upper surface highly polished; metasternum very short.....*dentigerum* Horn.

Form only moderately convex; entire upper surface alutaceous, the elytra most conspicuously so; metasternum of male of normal length. (Alaska.)

**alutaceum** n. sp.

Elytra distinctly punctulate, otherwise nearly as in *exiguum*.

*californicum* Horn.

4. More elongate oval, the elytra conspicuously longer than wide and more or less attenuate posteriorly; prothorax usually distinctly wider than the elytra; elytral punctures showing a more or less evident tendency toward a serial arrangement in longer or shorter lines at some portion of the disk.....5

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Metasternal fovea of male rather large and transverse.

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**dubitans** n. sp.

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11. Oblong oval, not very convex, scarcely at all contractile, black, thorax red, elytra each with six slightly impressed series of coarse punctures, the intervals also distinctly punctate.  
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 Broadly oval, convex, moderately contractile ..... 12
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 Piceous, thorax orange red, elytra irregularly punctate throughout ..... *estriatum* Horn.
13. Head with distinct postocular tempora, which when viewed from the front are nearly as long as and a little more prominent than the eyes; elytral punctures unusually fine and numerous; clypeal suture not impressed ..... *angulare* Mann.  
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Entire upper surface almost completely impunctate; pro-  
tarsi of female 4-jointed. (Lake Superior; Maine).

*parvulum* Lec.

Elytra very sparsely finely punctulate with tendency  
toward linear arrangement. (California).

*parile* n. sp.

Size larger (1.75 to 2.25 mm.), color black or piceous; ventral  
segments irregularly punctured .....15

- 15. Head distinctly alutaceous and somewhat dull, finely and  
sparsely but distinctly punctate ..... *rusticum* n. sp.  
Head polished, more numerous but very minutely and less  
distinctly punctulate .....16

- 16. Antennal stem rufotestaceous, club piceous; size smaller (about  
1.75 mm.).

Clypeal margin not retracted, the edge very narrowly pale  
but apparently without membranous border; 3rd anten-  
nial joint slender, narrower than the 2nd, twice as  
long as wide and as long as the two following united;  
elytral punctuation strong, completely confused.

*laetum* n. sp.

Clypeal margin retracted and with rather wide mem-  
branous border; 3rd antennal joint stout, not narrower  
than the 2nd, less than half longer than wide and  
shorter than the two following united; elytral punc-  
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*contiguum* n. sp.

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- 17. Metasternum finely and sparsely punctate.

*athabaskanum* n. sp.

Metasternum less finely and quite densely punctate, especially  
at middle ..... *alticola* n. sp.

- 18. Sutural stria normal; head with prominent postocular tem-  
pora; size rather large, color rufotestaceous to piceous, sur-  
face not alutaceous, elytra coarsely punctate. (Pacific  
Coast) ..... *coccinum* Mann.

Sutural stria normal, head without postocular tempora.

*columbianum* n. sp.

Sutural stria wanting, surface not alutaceous, virtually im-  
punctate ..... *rotundulum* Mann.

- 19. Metasternum at middle extremely short; upper surface com-  
pletely impunctate; elytra without sutural stria; size very  
small, length but little over 1 mm. (California).

*brevisternum* n. sp.

Metasternum of normal length .....20



25. Head and thorax piceous, margins of latter diffusely paler, elytral disk rufous with large blackish scutellar triangle; head unusually strongly and conspicuously punctate.

*difforme* Lec.

*Agathidium oniscoides* Beauv.

This common eastern species, though varying much in size, is on the average the largest in our fauna. Oddly enough the smaller specimens are nearly always females. It is highly polished and under low power appears to be "completely impunctate" as described by Horn. Under a  $\frac{1}{4}$  inch triplet however it is seen to be minutely punctulate throughout the upper surface. The sutural stria is shorter and finer than usual and quite characteristic of the species. In the male the hind thighs are more widened apically than in the female and are distinctly angulate on the posterior margin at the knee; there is also in this sex a tuft or pencil of erect hairs arising from a shallow depression on the median line and near the hind margin of the metasternum.

Occurs generally throughout the Eastern States from Canada to Georgia and west to Iowa and Arkansas.

*Agathidium rubellum* n. sp.

Body very contractile, rather broadly oval, moderately convex, reddish brown to rufotestaceous throughout, upper surface polished and virtually impunctate. Clypeus with more or less evident membranous border, elypeal suture obliterated. Antennae entirely pale, 3rd joint longer than the 2d and subequal to the next two united; 7th joint very little longer but not wider than the 8th. Hind angles of thorax broadly rounded, completely undefined. Elytra obliquely narrowed in basal two-fifths, the angle rounded and very obtuse; sutural stria fine, lightly but evidently impressed apically, completely disappearing some distance behind the middle. Metasternum impunctate, finely alutaceous at sides, polished at middle. Hind thighs rather stout, with a more or less defined angle at the outer condyle. In the material at hand females have not been recognized and it is impossible to say whether this character is a sexual one.

In the male the tarsal formula is 5-5-4, and the basal joints of the protarsi are slightly dilated; in this sex also there is a very small bristle bearing puncture at about the middle of the polished median area of the metasternum.

Length (fully extended) about 2 mm. or slightly more.

Five examples of this species have been sent me by Mr. Liebeck, who had referred them to *dentigerum*. They are all from North

Carolina without more definite locality, and all are of the same color and of nearly uniform size. The tabular characters are sufficient to separate them from any related species. In assigning the specific name *rubellum* it is assumed that the color is normal and not due to immaturity.

***Agathidium compressidens* n. sp.**

Body strongly contractile; broadly oval, moderately strongly convex, piceous, surface polished and impunctate. Clypeus broadly emarginate, with membranous border; clypeal suture not detectable. Antennae rufous, first two joints of club darker, terminal joint paler, 3d joint distinctly longer than the 2d and as long as the two following united; 7th plainly wider and longer than the 8th. Thorax slightly wider than the elytra, hind angles somewhat indicated though broadly rounded. Elytra as wide as long, humeri oblique, sutural stria wanting. Mesosternum sharply carinate and horizontal in front, a little oblique between the middle coxae. Metasternum with distinct oblique ridge each side, transversely strigoso-alutaceous laterally but without punctures, smooth at middle. Hind thigh slender; tarsal joints (♀) 5-4-4.

Length (extended) 2.5 mm.

At the base of the intercoxal process of the first ventral segment there is a small erect and somewhat oblique laminiform or compressed tooth. This may or may not prove to be a secondary sexual character of the female; I have seen nothing like it in either sex of any other species.

Described from two female specimens, one received from Mr. Liebeck and bearing label "White Mts., N. H., woods," the other (selected as the type) in my collection from Round Knob, North Carolina, received many years ago as *dentigerum*, which indeed it greatly resembles superficially. It is definitely separable from *dentigerum* by the 3rd antennal joint distinctly longer than the 2nd, and by the metasternum at middle being of nearly normal length.

***Agathidium exiguum* Melsh.**

Closely allied and very similar to *oniscoides* but much smaller, averaging in length from 2 to 2.5 mm. when more or less extended. The punctuation of the upper surface is very fine, somewhat variable, but usually a little more apparent than in *oniscoides*; the sutural stria is about twice as long as in the latter and much

coarser. The metasternum of the male is provided with a similar tuft of erect hairs, which in this case is more nearly at the middle of its length. The hind thighs are not materially different in the sexes.

*Exiguum* inhabits the same region as *oniscoides* but its range is somewhat more extended if the reported locality "Colorado" is correct.

*Agathidium dentigerum* Horn.

Black or piceous, margins of thorax diffusely rufescent, beneath including antennae and legs brown or reddish brown. The size is rather small (2 mm. or a little more fully extended), the body perfectly contractile. Surface smooth and polished, quite impunctate, and without sutural stria. The 2nd antennal joint is rectangular, slightly wider and just perceptibly longer than the 3rd, strictly speaking a unique character. The hind femur of the male is armed with a triangular tooth near the outer condyle.

The above set of characters are quite sufficient to distinguish this species from any other in the genus; however it possesses another all but unique feature in that the metasternum is extremely short at middle so that the middle and hind coxae are almost in contact. This character was overlooked by Horn and I have observed it elsewhere only in the very small *brevisternum* n. sp., which belongs to a wholly different section of the genus. I have seen no females of *dentigerum* but Horn says they have the slender tarsi with 5-4-4 formula and simple hind femora characteristic of females in general.

*Dentigerum* was described from a single pair taken by Schwarz at Stone Creek, Lee Co., Virginia. There is a single male bearing this label in the Le Conte collection, the location of the original female is unknown to me. Mr. Liebeck writes that neither of the original types are now in the Horn collection. I have seen a number of specimens taken by Schwarz at Round Knob, N. C., and others from Black Mts., N. C., collected by Beutenmuller.

*Agathidium alutaceum* n. sp.

Body very strongly contractile, rather broadly oval and moderately convex; piceous, antennae and legs paler, entire upper surface very finely alutaceous and sparsely minutely punctulate under the strongest hand lens; head and thorax moderately shining, the elytra slightly less so because of the more obviously alutaceous surface. Clypeal margin just visibly retracted and with perceptible membranous border;



clypeal suture invisible. Antennae reddish brown, the terminal joint slightly paler; 3rd joint very slightly longer than the 2nd and barely as long as the two following united, 7th and 8th transverse, not very unequal. Hind angles of thorax completely undefined, sides continually arcuate with the base. Elytra as wide as long, evidently narrowed basally but without lateral angle; sutural stria wanting. Metasternum finely alutaceous, a little smoother at middle, punctures few and fine, oblique ridges rather feeble. Hind tarsal joints (♀) 5-4-4.

Length 2.25 mm. (thorax raised but head deflexed).

Described from a unique female specimen with locality label "Alaska," received from Mr. Liebeck.

Among the few species without sutural stria this one is unique in its entirely alutaceous upper surface.

*Agathidium californicum* Horn.

Among the species of the first limited group, viz., those possessing the oblique metasternal ridge, this is the only one in which the elytra show an evident punctuation under moderate or low power. The head and thorax appear to be impunctate, but under higher amplification are seen to be minutely alutaceous with scattered extremely fine punctures. In almost every other respect agrees nearly with *exiguum*, the characters of which need not be here repeated. Just behind the middle of the metasternum in the male there is a shallow pit or impression bearing short erect hairs.

This species is said by Horn to occur in "California, Nevada and Washington Territory." It is represented before me by several examples from Salmon Arm, British Columbia, sent by Mr. Hugh B. Leech, a specimen from Fresno Co., Cal. (Dietrich), and a single male in my own collection from Lake Tahoe, California.

*Agathidium depressum* n. sp.

Form much depressed, elongate oval, distinctly attenuate posteriorly, body only feebly contractile. Color piceous, thorax usually more or less rufous especially around the margins, the elytra often becoming gradually rufous or rufescent at apex. Antennae rufous, club piceous, 3rd joint a little longer than the next two, 7th very distinctly both longer and wider than the 8th. Clypeal margin truncate, just perceptibly retracted and with distinct membranous border; clypeal suture very fine, detectable but not impressed. Entire upper surface shining, not at all alutaceous, everywhere numerously punctate; the punctures of the head

and thorax rather fine, those of the elytra coarser and closer, with here and there a tendency toward a serial arrangement. Prothorax perceptibly wider than the elytra, hind angles broadly rounded; elytra very plainly elongate and gradually narrowed from near the base; sutural stria long, extending to the basal third or fourth. Body beneath piceous, legs reddish brown. Mesosternum a little oblique between the coxae, horizontal and carinate in front. Metasternum horizontal, alutaceous, sparsely punctate, oblique lateral ridge wanting. Tarsal formula 5-5-4 (♂), 5-4-4 (♀).

In the male there is a small round bristle bearing fovea near the middle of the front margin of the metasternum, the basal two joints of both fore and middle tarsi are very distinctly dilated, and the rear margin of the hind femur is distinctly angulate at its outer extremity; not so in the female.

Length (extended but head vertical) 2.8 to 3.25 mm. In the type the dimensions of the elytra are—length 2.2 mm., width 1.75 mm., the thorax slightly wider than the elytra.

The type is a male collected at Terrace, British Columbia, by Mrs. W. W. Hippiusley and kindly given me by Mr. C. A. Frost. Other localities represented before me are Seward, Alaska, VI-15-1911 (W. S. McAlpine), 1 ♀; McKinley Park, Alaska, July 8, 1924, one pair (♂ ♀) collected by the writer; Edmonton, Alberta, 1 ♂, (F. S. Carr); Montreal and Rigaud, Quebec, 1 ♂, 3 ♀s, sent by Mr. Liebeck. A single female example from Urbana, Illinois (C. P. Alexander, May 1, 1921), sent by Mr. Frost, is doubtfully referred. It is a little less depressed than the typical form but scarcely differs otherwise; the male when found may show it to be distinct.

There are under *revolvens* in the Le Conte collection two "Cal." examples which seem to belong to this species, and it is probable that others will be found so placed in various collections.

This and the following seven species constitute a compact and well defined group, which while possessing with the preceding group the subhorizontal mesosternal intercoxal process, is characterized by the absence of the oblique metasternal ridge, the generally less convex form and low degree of contractility; the metasternum is long, horizontal, alutaceous and usually more or less subrugulose; the 3rd antennal joint longer than the two following united; the upper surface distinctly punctate throughout. The species are very generally referred to *revolvens* in collections and this name may appropriately be applied to the group.

#### **Agathidium jasperanum** n. sp.

Very similar to the preceding species, the description of which applies equally well here except in the following par-

ticulars. The size is slightly smaller on the average than in *depressum*, the form noticeably less depressed when viewed in profile; antennae entirely rufous, the club not appreciably darker than the stem; the metasternal fovea of the male much larger and transversely oval in form. The color is about the same, the upper surface piceous, the thorax usually rufescent, but the elytral apex scarcely so.

Length 2.5 to 3 mm., width about 1.7 mm.

The type series comprises four examples, all taken by the writer, *viz.*—Jasper Park, Alberta, August 4, 1924 (2♂, 1♀); White Horse, Yukon Territory, June 21, 1924 (1 ♀). The type is a male from the first named locality.

#### *Agathidium dubitans* n. sp.

Elongate oval, moderately convex, form distinctly less depressed than in *depressum* and nearly as in *jasperanum*. Color above piceous, the thorax broadly diffusely rufescent around the margins, legs and antennae throughout rufous. Upper surface shining, non-alutaceous and punctured as in the two preceding species. The elytral punctures are more or less serially arranged and some of the longer lines are very faintly impressed in certain lights. The hind angles of the thorax are broadly rounded, the elytra evidently elongate and feebly attenuate.

In the male the metasternum bears a very small punctiform setiferous fovea in the usual antero-median position, the basal joints of the fore and middle tarsi are perceptibly dilated, and the terminal angle of the hind thighs is sharply defined, a little obtuse.

Length (partly extended) of type 2.9 mm., width of thorax 1.6 mm.

Described from a single male specimen from Cloudercroft, New Mexico, and bearing date June 9–12. The metasternal fovea in the unique type is so minute as to easily escape notice. Because of the limited amount of material available for study it is not yet possible to say to what extent this metasternal fovea of the males may vary individually within the species. For the present it is assumed to be substantially constant.

#### *Agathidium revolvens* Lec.

This species was described from a unique female specimen from the north shore of Lake Superior. Several other examples from different regions were later placed with it in the Le Conte collection

but none of these is closely in accord with the type nor have I as yet seen a specimen that could safely be so referred. The following description drawn from the type is sufficiently full for comparative purposes.

Form broadly oval, moderately convex, semicontractile. Above piceous black, shining; legs and antennae entirely rufous. Clypeus truncate, very feebly retracted, with membranous border; clypeal suture not impressed, barely detectable. Third joint of antennae subequal to the next three, seventh joint only just perceptibly larger than the eighth. Head and prothorax finely sparsely punctate; elytra comparatively coarsely and closely so and with several perceptibly impressed lines occupied by serial punctures. Prothorax not distinctly wider than the elytra, hind angles broadly rounded, scarcely defined; elytra very little longer than wide, humeri oblique with well defined obtuse angle. Metasternum horizontal, alutaceous and sparsely punctate, without oblique ridge.

Length (extended) 3.4 mm.

*Revolvans* is distinctly more broadly oval with less elongate elytra than in the three preceding species, in which moreover the serially arranged punctures nowhere occupy perceptibly impressed lines.

With the exception of my *A. virile* (Occ. Papers, Cal. Acad. Sci. VIII, 1901) and *A. conjunctum* recently described by Mr. W. J. Brown (Can. Ent. 1933, p. 46) the somewhat numerous closely allied species of this group have not hitherto been differentiated but have been referred indiscriminately to *revolvans*. In my Alaskan paper (Pan Pac. Ent. Jan. 1926) the McKinley Park and White Horse specimens which I recorded as *revolvans* belong respectively to *depressum* n. sp. and *jasperanum* n. sp. of the present paper.

#### **Agathidium cavisternum** n. sp.

Broadly oval, moderately convex, piceous black, shining, sides of thorax and elytral apex brunnescent. Clypeal margin slightly retracted and with narrow membranous border; clypeal suture undefined. Antennae entirely rufotestaceous, 3rd joint as long as the next three, 7th a little longer but scarcely wider than the 8th. Prothorax not distinctly wider than the elytra, hind angles broadly rounded. Elytra very little longer than wide, sides oblique for a short distance at the humeri, with distinct obtuse angle. Head and thorax sparsely fine punctate, elytra more coarsely and closely punctured, with faint indications of one or two impressed lines;



sutural stria attaining the middle. Metasternum alutaceous and sparsely punctate at sides, smooth with a few finer punctures at middle. Legs reddish brown, hind thighs rather coarsely and numerous punctate.

In the male the metasternum becomes abruptly declivous and concave anteriorly in about the middle third, and with a transverse line of erect hairs within the concavity. In this sex also the basal joint of the protarsus is unusually strongly dilated, the 2nd joint and also the basal joint of the middle tarsus less evidently so; hind thighs with a broad but sharply defined tooth at some distance from the apex. In the female the metasternum is horizontal throughout, the tarsi and hind femur unmodified.

Length (type ♂) 3.25 mm.; two females are somewhat smaller.

Described from four examples, three of which including the type were collected at Terrace, British Columbia, by Mrs. W. W. Hippisley and submitted by Mr. C. A. Frost, who kindly permits me to retain the type: the latter bears labels "IV-8-1924" and "sifting moss." The fourth example is a male from Stickeen River Canon, B. C., collected by Wickham and submitted by Mr. Liebeck, to whom it is returned.

This species is probably the nearest one of the group to the true *revolvens*, it being the only one to show faint traces of the impressed elytral lines which characterize that species. If the male of *revolvens* when found should prove to possess the pronounced and in part unique sexual characters of the present species, their identity could not be doubted.

#### *Agathidium virile* Fall.

Rather broadly oval, moderately contractile; piceous black, sides of thorax diffusely paler; legs and antennae entirely reddish brown; surface polished and sparsely finely punctate, the elytra a little more coarsely so. Third antennal joint as long as the three following, seventh and eighth subequal. Prothorax scarcely wider than the elytra, hind angles rounded. Elytra perceptibly longer than wide, not at all attenuate, sides obliquely narrowed at the humeri, sutural stria strong, extending in front of the middle; surface without trace of impressed lines and virtually without serially arranged punctures. Metasternum alutaceous and subrugulose, sparsely punctate.

In the male the basal joints of pro- and mesotarsi are distinctly dilated; the posterior margin of hind thighs is con-



cave and with a moderately strong dentiform angle at the outer extremity; the metasternal fovea varies somewhat in size, is near the anterior margin, transversely oval, and bears a line of short hairs, which in the type is interrupted in the middle.

Length about 2.5 mm. (head deflexed), about 3 mm. fully extended.

Southern California. The type is a male collected by the writer at Pomona, March 25, 1893. Other examples are from Riverside and Pasadena. With the above are placed in my collection a number of specimens from Middle California (Alameda; Berkeley; Belmont; Santa Cruz), some of which differ in having the antennal club infuscate; these are probably not specifically distinct.

*Agathidium conjunctum* Brown.

Broadly oval, moderately convex and contractile; black, pronotal sides and legs dark reddish brown. Antennae rufous, club somewhat darker; 3rd joint as long as the three following, 7th slightly but distinctly longer and wider than the 8th. Hind angles of thorax broadly rounded. Elytra very slightly longer than wide, sides broadly rounded to apex, not at all attenuate. Head and thorax finely but distinctly punctate, elytra less finely so, not at all substriate, scutellar stria attaining the basal fourth. Clypeal, sternal and tarsal structure as in other species of the group.

Length of type (extended) 3.4 mm., width 2 mm.

This species was described by Mr. W. J. Brown (Can. Ent. 1933, p. 46) from a single male taken at Langdon, British Columbia, March 7, 1931 (K. Graham). The hind thighs are described as "widened apically, with a tooth on the lower posterior margin near the apex, the tooth moderate in size, wide at base, acute at apex." The description states that the metasternum is "without a fovea and hair tuft near the middle of the anterior margin," but in answer to my request that he confirm this statement Mr. Brown writes that "the bristle bearing pit is present; it is very small and punctiform."

In my own collection two examples (♂, ♀) from Seattle, Wash., and also two from "W. T." and one from Nevada submitted by Mr. Liebeck, are confidently referred to this species.

*Agathidium omissum* n. sp.

Oval, moderately convex and contractile; piceous black, sides of thorax and apex of elytra brunnescent; legs dark

rufous, antennae paler rufous, the club not darker. Antennae with 3rd joint as long as the three following, 7th joint slightly larger than the 8th. Upper surface strongly shining, punctures of head and thorax sparse and fine, of elytra a little coarser. Elytra perceptibly longer than wide, oval, not attenuate; sutural stria deep, attaining the basal fourth, otherwise without trace of impressed lines or serial punctures. Metasternum alutaceous, feebly rugulose, and sparsely punctate.

Length (type, fully extended) 3 mm.; width of elytra 1.5 mm., of thorax 1.6 mm.

The unique type is a male, taken at Glacier Park, Montana, July 10, 1929, by Miss Edith Mank, who has kindly presented it to me. This male shows no detectable setiferous metasternal fovea, the basal joint of both fore and middle tarsi is conspicuously dilated, the second joint perceptibly so; the hind thighs are concave on their posterior margin, the outer extremity with a sharply defined tooth.

This is the only species of the *revolvens* group thus far known (male of *revolvens* not known) in which the male is not characterized by the presence of the bristle bearing fovea. Should its absence prove to be accidental rather than specific there would be little if anything to separate *omissum* from *conjunctum*.

*Agathidium sexstriatum* Horn.

The tabular characters constitute a quite sufficient diagnosis of this unusually distinct species. As there indicated it is the first of a series of four species having the hind angles of the thorax sharply defined and subrectangular and the protarsi of the female 4-jointed. The 8th antennal joint is distinctly wider than the 7th, both strongly transverse; the clypeus is slightly more advanced than the sides of the front, without membranous border, the clypeal suture traceable but not impressed. The elytra are distinctly longer than wide in about the ratio of five to four. The mesosternum is elevated just before the middle coxae in a thin transverse process with rounded summit; metasternum not alutaceous, numerous rather strongly punctate. In the male the four anterior tarsi are distinctly dilated, and the metasternum shows in advance of the middle two transversely arranged shallow erosions bearing golden yellow hairs.

Length (extended) 2 mm. or a little more.

Occurs in Western Nevada and the adjacent regions of California.

*Agathidium bistriatum* Horn.

Broadly oval, convex, semi-contractile, piceous, moderately shining. Clypeus rufous, without membranous border, clypeal suture finely impressed. Antennae brownish red, the first two joints of the club a little darker, the terminal joint paler; 7th and 8th joints progressively wider and strongly transverse. Head finely punctate; thorax scarcely visibly so except under high power; elytra conspicuously punctate, each with two or more incomplete rows of larger punctures on the disk. The elytra are scarcely longer than wide, humeral angles sharply defined and a little obtuse; sutural stria moderate. Mesosternal intercoxal area produced upward (as viewed inverted) in a thin transverse plate with rounded summit, the same as in *sexstriatum*; metasternum not alutaceous, finely punctate at sides, smoother at middle posteriorly.

In the male the protarsi are moderately dilated, the mesotarsi only feebly so; the metasternum as in *sexstriatum* is provided with two ante-median shallow erosions bearing short erect yellow hairs.

Length about 2.5 mm.

Described from Western Nevada. I have in my collection an example from Lassen County in Northeastern California, collected by Nunenmacher.

*Agathidium estriatum* Horn.

Broadly oval, convex, semi-contractile, piceous, shining, thorax rufous. Clypeus a little advanced beyond the sides of the front, truncate, without membranous border, clypeal suture finely impressed. Terminal joint of antennae a little paler, 8th joint wider than the 7th. Prothorax sparsely minutely punctulate, hind angles sharply subrectangular. Elytra slightly longer than wide, moderately densely rather finely punctate, the punctures somewhat unequal to size. Metasternum very finely alutaceous and evenly rather sparsely finely punctate; a small bristle bearing fovea before the middle in the male.

Length about 2.5 mm.

This species was described from a single male specimen from Garland, Colorado (Schwarz).

There are now two Garland, Col., specimens in the Horn collection (*vide* Liebeck), and the Le Conte collection contains a single male from the same locality; this last the only example of the species I have been able to study. Although Horn had not seen the

female he apparently assumed that it would have 4-jointed protarsi because of its natural association on other grounds with species having this character.

*Agathidium angulare* Mann.

Broadly oval, more evidently attenuate than usual, moderately convex; color dark brown or piceous, the thorax inclining to be more or less rufescent. The clypeal margin is a little retracted and with membranous border; clypeal suture traceable but scarcely impressed. Antennae rufous, the club darker, 7th and 8th joints strongly transverse, subequal. The sides of the head instead of being subparallel or obliquely narrowed immediately behind the eyes as in all the preceding species, are here a little swollen so as to be as prominent or a little more so than the eye itself. The hind angles of the thorax are somewhat defined but with rounded vertices. The entire upper surface is very finely but rather densely punctulate, the punctures on close attention showing considerable inequality in size. Metasternum alutaceous and finely punctate, and in the male there is before the middle a minute punctiform fovea bearing one or two short erect bristles. The fore and middle tarsi of the male are moderately dilated.

Length 2 to 3 mm.

Horn's diagnosis was evidently drawn from the two specimens of this species in the Le Conte collection. One of these, from Sitka (the type locality), bears a foreign number "93" and is in all probability from Mannerheim; the other is from Veta Pass, Colorado, and presumably collected by Schwarz; it appears to be identical with the Alaskan specimen. In my own collection are examples from Washington State ("W. T."), Tuolumne Meadows, Cal., and Mohawk, Cal. (Fenyès). I have also placed tentatively with these two entirely rufotestaceous specimens, a male from Plumas Co., California (Nunenmacher) and a female from "Arizona." In these last the antennae are entirely pale.

The most important characters of this species are the postocular tempora and the unusually dense punctulation. I observe in my own specimens referred to *angulare* that the antennal club is unusually large, and that in certain examples at least the funicular joints are bristling with numerous short erect hairs. I could not test out this last character in the Alaskan example from Mannerheim because of the gummed up condition of the antennae.

*Agathidium parvulum* Lec.

Le Conte's unique type of this species was judged by Horn to be merely a small specimen of *politum*. In this he was in error, as a careful examination of the type reveals numerous important differences. *Parvulum* is smaller and even more convex than *politum*; the surface is quite impunctate, the left mandible of the male is not at all modified, the clypeus is not emarginate and is without membranous border, the clypeal suture is finely impressed, the hind angles of the thorax are somewhat defined, and the ventral segments are provided each with only a single row of punctures extending from side to side; in all of which respects it differs from the true *politum*. The size in *parvulum* is very small, about 1.3 or 1.4 mm.; the color is entirely rufotestaceous; the 7th and 8th antennal joints are very strongly transverse, the 8th fully twice as wide as long, the 7th a trifle wider and thicker than the 8th; the metasternum is finely alutaceous at sides, smooth at middle and virtually impunctate; in the male there is a well defined erosion with erect hairs before the middle.

Le Conte's unique type is a male from Marquette, Lake Superior. Besides this I have seen but one other specimen, a female, in the Blanchard collection at the Cambridge Museum. This female shows the tarsal formula 4-4-4.

*Agathidium parile* n. sp.

Very small, length about 1.4 mm., strongly convex, entirely rufotestaceous; surface highly polished, very sparsely finely punctulate, the punctures most evident on the elytra, where they exhibit an obvious tendency to arrangement in rows. The clypeus, clypeal suture, antennae, hind angles of thorax, metasternal and ventral sculpture, are almost precisely as in *parvulum*. As in *parvulum* also the humeral angle is sharply defined and a little obtuse, and the sutural stria is moderately deep and attains the middle of the elytra.

Described from two male specimens collected by Dr. Fenyés at Sugar Pine, California. These show a minute punctiform bristle bearing fovea on the median line of the metasternum in advance of the middle.

*Agathidium rusticum* n. sp.

Broadly oval, moderately strongly convex, piceous. Head rather strongly alutaceous and finely but distinctly punctulate; thorax minutely alutaceous with scattered very fine punctules; elytra non-alutaceous, distinctly sparsely punctate.



tate, the punctures here and there showing a serial arrangement. Antennae rufous, outer five joints piceous; 7th joint wider than and nearly twice as thick as the 8th. Clypeal margin virtually level with the sides of the front and with extremely narrow membranous border; clypeal suture strongly impressed. Hind angles of thorax well defined, a little obtuse. Metasternum finely alutaceous at sides, smooth at middle, punctures sparse and unevenly distributed. Before the middle of the metasternum in the male is a transverse linear erosion bearing a row of about eight erect setae; the female has not been seen.

Described from two male specimens, of which the type in my own collection is from the White Mountains, New Hampshire, and bears label "Crawford Notch, 7-25-08." The second example, furnished by Mr. C. A. Frost, is labelled "Holliston, Mass., V-5 or 18, 1923 (J. H. Emerton)."

The most notable feature of this species is the distinctly alutaceous head, the thorax being very feebly alutaceous and the elytra not at all so.

#### *Agathidium laetum* n. sp.

Moderately broadly oval, strongly convex; head and elytra piceous, thorax rufopiceous; integuments polished; head and thorax sparsely very finely punctulate, elytra sparsely but very distinctly strongly confusedly punctate. Antennae rufous, club piceous; 3rd joint much more slender than the 2nd, twice as long as wide and as long as the two following, 7th and 8th subequal and strongly transverse. Clypeal margin not retracted, feebly arcuate, continuous with the sides of the front, margin very narrowly pale; clypeal suture impressed. Hind angles of thorax a little obtuse, defined, but with vertices narrowly rounded. Elytra oval, distinctly longer than wide, humeral angle sharply defined, somewhat obtuse; sutural stria strongly impressed, attaining the middle of the elytra. Metasternum not alutaceous, and with a few scattered punctures. Tarsal formula of female 5-4-4.

Length (not extended) about 1.75 mm.

Described from two female specimens taken by the writer at Pasadena, California, one bearing date 4-15-05.

This species agrees with the preceding in a considerable number of features but is easily separable by the tabular characters. In addition to the points there mentioned the rufescent thorax and non-alutaceous metasternum in *laetum* are probably also distinctive.

**Agathidium contiguum** n. sp.

Oval, moderately convex, piceous, margins of thorax pallescent; integuments shining; head and thorax minutely obsolete punctulate; elytra less finely and more distinctly punctate, with evident tendencies toward serial arrangements. Antennae rufous, club piceous; 3rd joint as wide as the 2nd, less than one-half longer than wide and shorter than the two following united; 7th and 8th transverse, the former a little thicker but scarcely wider than the 8th. Clypeal margin retracted and with wide membranous border; clypeal suture impressed. Hind angles of thorax somewhat defined but with rounded vertices. Elytra perceptibly wider than the thorax and a little longer than wide, humeri obtusely but sharply angled; sutural stria moderate. Metasternum very finely alutaceous, finely sparsely punctate. In the male the metasternum shows a transverse arcuate scratch or erosion before the middle, in which is a series of about nine fine punctures which probably bore fine erect setae, but these have now been lost.

Length (extended) about 1.8 mm.

Described from a male specimen from Washington State ("W. T.") sent by Mr. Liebeck. With this I place a female example also sent by Liebeck, from Seattle, Wash. This latter scarcely differs from the type except in being entirely rufotestaceous and in having the terminal joint of the antennae paler; its tarsal formula is 5-4-4, that of the male 5-5-4.

**Agathidium athabascanum** n. sp.

Rotundate oval, strongly convex; piceous brown, legs, antennae and ventral segments reddish brown. Upper surface entirely without alutaceous sculpture, strongly shining; head and thorax with very obscure minute punctulation, which is almost invisible except under a strong lens; elytra finely but distinctly uniformly punctate, without any tendency toward serial arrangement. The 7th antennal joint is triangular, only slightly transverse, 8th a little shorter but subequal in width to the 7th. Clypeal margin not retracted and with pale coriaceous border; clypeal suture impressed. Hind angles of thorax defined, a little obtuse, their vertices narrowly rounded. Elytra very nearly as wide as long; sutural stria moderate. Metasternum finely alutaceous and sparsely finely punctate; male with an antemedian very small punctiform bristle bearing fovea.

Length (not extended) 2 mm.; width 1.5 mm.

Described from a unique male specimen taken by the writer at Jasper Park, Alberta, Aug. 4, 1924.

*Agathidium alticola* n. sp.

This species is so completely in accord with the preceding except in the one tabular character—the punctuation of the metasternum—that it seems not worth while to repeat the description. In *athabascanum* the metasternum is sparsely finely punctate and without a defined impunctate area along the rear margin. In the present species the metasternum is densely a little less finely punctate over the entire surface excepting a narrow sharply defined area on either side along the posterior margin but not attaining the outer angle, which is entirely impunctate.

The proper description of the clypeal margin is somewhat uncertain. In the male type there appears to be a well defined membranous border; in another example this border seems quite lacking, and in others the appearance is intermediate. A similar situation has been observed in certain other species, it being at times difficult to distinguish between a true membranous border and a mere pale more or less coriaceous edge of the clypeus itself. In the female the tarsal formula is 5-4-4.

Length 2 to 2.25 mm.

Six examples of this species have been seen, all bearing the label "White Mts., N. H., subalpine, July 1, 1896," and probably all collected by Frederick Blanchard from whom I received my pair.

*Agathidium concinnum* Mann.

Rotundate oval, moderately convex, color varying from rufotestaceous to piceous, surface strongly shining, not at all alutaceous. Head very finely punctulate, thorax equally finely but more sparsely and very indistinctly so, elytra relatively quite coarsely not densely punctate. Antennae either entirely rufous or with the club darker; 7th joint a little larger but scarcely wider than the 8th. Clypeal suture impressed. Hind angles of thorax broadly rounded. Elytra very little longer than wide, humeral angle rounded, sutural stria strong. Metasternum alutaceous, distinctly punctate; male with a punctiform bristle bearing fovea before the middle.

Length averaging about 2.5 mm.

This is perhaps the commonest *Agathidium* of the Pacific Coast, ranging from Southern California to Alaska. Two examples from Colorado (Breckinridge and above Ouray, collected by Wickham) have been sent by Mr. Liebeck.

Horn describes the clypeus as entirely corneous. This is probably true but in many specimens the edge is narrowly pale, simulating a membranous border; in one example the pale margin is wider than usual and has all the appearance of being truly membranous. In several males in the series before me there is a minute denticle near the middle of the rear margin of the hind femur; other males show no trace of this and I am as yet unable to discover any correlated characters which permit of making a division into two species. The prominent tempora at once distinguish this species from its nearest relatives and constitute its most important character.

*Agathidium columbianum* n. sp.

Broadly oval, moderately convex; piceous, the sides of the thorax diffusely, and antennae and legs paler; entire upper surface polished; head and thorax minutely sparsely punctulate, the elytra rather sparsely but very distinctly so, the punctures showing no trace of serial arrangement. Head without post-ocular tempora; clypeus entirely corneous, arcuately more prominent at middle than the sides of the front; clypeal suture impressed. Hind angles of thorax broadly rounded. Elytra perceptibly longer than wide, humeri rounded, sutural stria well impressed. Metasternum alutaceous and distinctly punctate; male with a punctiform bristle bearing fovea before the middle.

Length (body somewhat extended) 2 mm.

Described from a single male specimen taken at Terrace, British Columbia, by Mrs. Hippisley, and kindly given me by Mr. Frost.

This species is without any marked peculiarities of structure and is to be recognized by the combination of tabular characters. The antennae are not clearly visible as mounted.

*Agathidium rotundulum* Mann.

Globose oval, strongly convex and contractile; piceous, margins of body often paler; feet and antennae rufous, the antennal club piceous. Surface strongly shining, absolutely impunctate, elytra without sutural stria. Clypeus not at all retracted, truncate at middle, entirely corneous; clypeal suture not impressed, traceable only in certain lights. Hind angles of thorax broadly rounded. Beneath sparsely punctulate; metasternum of normal length.

Length 1.5 mm. (body contracted), 2 mm. (fully extended).



Described from Alaska. There is in the Le Conte collection a supposedly typical example from Mannerheim bearing number "95." This is doubtless one of the two specimens from Mannerheim from which Horn says he drew his description. Mr. Liebeck's collection contains two examples from Vancouver. I have in my own collection a specimen from the Santa Cruz Mts., California, which agrees in all visible characters with the one from Mannerheim. Both specimens are so mounted that it is impossible to determine their sexual characters.

The small size, impunctate surface and lack of sutural stria easily distinguish this species from any other in this part of the genus except *brevisternum*, which is even smaller and has the horned left mandible in the male, and an extremely short metasternum.

#### **Agathidium brevisternum** n. sp.

Form globose, very convex and strongly contractile; color reddish brown to castaneous, paler beneath; upper surface shining and absolutely impunctate. Antennae entirely pale, 3rd joint elongate cylindrical, 7th oval, rather longer than wide, 8th oval and a little transverse. Clypeus truncate, with or without evident membranous border; clypeal suture not impressed. Hind angles of thorax feebly defined, vertices rounded. Elytra a little wider than long, humeri rounded, sutural stria wanting. Metasternum very short at middle. In the male the basal joints of the four anterior tarsi are slightly dilated as usual, and the left mandible is armed with a moderately long erect curved horn.

Length (body contracted) barely 1 mm.

Described from a single pair kindly given me many years ago by Mr. Schwarz, from a series collected by Mr. H. S. Barber at Eureka, California. The type is a male and bears date 24th of May.

This minute species is easily recognizable in the group having the left mandible prolonged or horned, by its size, absolutely smooth upper surface, and lack of sutural stria.

#### **Agathidium atronitens** n. sp.

Globose oval, very convex, black or piceous, upper surface polished and impunctate. Antennal stem rufous, first two joints of club piceous, terminal joint paler; 2nd joint slightly longer than the 3rd, 7th and 8th moderately transverse and subequal. Clypeal suture completely undefined.



Hind angles of thorax only feebly defined, their vertices rather broadly rounded. Elytra as wide as long; humeri rounded; sutural stria moderate. Metasternum alutaceous and almost or quite impunctate. Tarsal formula of female 4-4-4.

Length (not extended) about 2 mm.

To this species belong the piceous examples included by Horn under *politum*. Horn observed that the dark specimens were "absolutely smooth" while the pale ones were "microscopically punctulate." Further study would have revealed that the dark form is perceptibly more convex and that in it the 3rd antennal joint is barely as long or even slightly shorter than the 2nd, while in the pale form the 3rd joint is distinctly longer than the 2nd as is usual. Horn states that the protarsi of the female are five jointed, whereas in both *politum* and the present species there are only four joints in this sex.

Only two examples of the present species are before me; the type, a female from Urbana, Illinois, in my own collection, and a male from the District of Columbia sent by Mr. Liebeck. In this male the left mandible is distinctly prolonged but not horned; the bristle bearing fovea of the metasternum is probably present but is invisible as mounted. Mr. Liebeck writes that the specimens of this species in the Horn collection are from the District of Columbia and Missouri.

*Agathidium repentinum* Horn.

The following is Horn's description. "Oval, convex, contractile, piceous, shining. Head sparsely punctulate, clypeus prolonged at middle, truncate at tip and corneous. Thorax more than twice as wide as long, hind angles broadly rounded, surface sparsely punctulate. Elytra oval, very little longer than wide, humeri oblique forming a distinct angle with the sides, sutural stria extremely fine but attaining the middle, surface very distinctly punctate. Body beneath sparsely punctate. Length 2 mm."

I give as a valuable addition to the above the following notes submitted by Mr. Liebeck after a careful examination of the type. "The color of the elytra, most of the head, and antennal club is piceous; the base of the head at middle, antennae except the club, thorax, tip of elytra and the entire under surface is reddish brown, the latter of varying shade; entire upper and under surface alutaceous. Clypeal suture fine and distinct, the front third of the clypeus pale and sharply defined but corneous like the remainder.

The punctures of the head are fine and separated by rather more than their own diameters; clypeus at base with coarse punctures which gradually become smaller to the limited pale area which is impunctate. The antennae are rather short, 2nd joint almost globular, 3rd cylindrical and but little longer, 4th and 5th not transverse almost quadrate, 6th slightly and 7th and 8th decidedly transverse. The thoracic punctures are finer than those on the head. Elytra very convex, notably high for the size; the sutural striae are distinct when viewed from above toward the apex, sharply defined and not impressed each side as with many other species. Probably Dr. Horn used the expression 'extremely fine' because the groove is sharply limited on the flat surface without any noticeable impression each side. The elytral punctures are coarser and more distinct as compared to those of head and thorax, dense at sides, where they are separated by their diameters or less, somewhat finer and more widely spaced on the disk and still finer toward the apex."

Horn's description was drawn from a unique female specimen taken by Frederick Blanchard in the "White Mountains, New Hampshire, woods."

Not having seen an example of *repentinum* an inquiry addressed to the National Museum brought a reply from Mr. W. S. Fisher that they had in their collection four examples of a species from Bear Paw Mt., Montana, which had thus been referred by Schwarz. Two of these specimens, a male and female, were sent me for examination and I in turn sent the female to Mr. Liebeck for comparison with the Horn type. He reports that the Montana specimen agrees well in all essential features with the type and that he "feels safe" in assuring me of their specific identity.

If this be the case it becomes necessary to shift the position of *repentinum* in the table to the group having the left mandible of the male horned, since in the Bear Paw Mt. male the left mandible is thus armed. In the Bear Paw Mt. female the protarsi are quite surely four jointed. Horn failed to state the number of protarsal joints in his unique female type and Mr. Liebeck writes that he is unable to determine the number with certainty.

#### *Agathidium politum* Lec.

Broadly oval, moderately strongly convex, rufotestaceous; surface apparently impunctate but with a strong lens minute punctules can be seen scattered sparingly over the elytra, and detectable with more difficulty on the thorax.

Antennae entirely pale, 3rd joint distinctly longer than the 2nd. Clypeal margin a little retracted, the membranous border narrow and varying in distinctness; clypeal suture traceable but not impressed. Hind angles of thorax broadly rounded. Elytra slightly longer than wide, humeral angle obtuse, indicated but with rounded vertex; sutural stria rather long, distinct. Metasternum alutaceous, virtually impunctate; a punctiform bristle bearing fovea in the male in the usual position before the middle. Left mandible of male either prolonged or with an erect curved horn. Protarsi of male feebly dilated, the middle tarsi scarcely perceptibly so; tarsal formula in the female 4-4-4.

Length (not extended) about 2 mm.

Le Conte's type was taken by Melsheimer in York Co., Pennsylvania. It is a male and is the sole representative of the species in his collection. Horn states that the species occurs from Canada to Kentucky and from Pennsylvania to Missouri. There are before me specimens from Montreal, Can., Providence, R. I., and Cincinnati, Ohio.

*Agathidium maculosum* Brown.

Globose-oval, strongly convex; flavo- or rufotestaceous with black markings as follows:—a transverse occipital band; a median rounded pronotal spot of variable size; a sutural stripe which is dilated at base into a transverse quadriform area, a further lesser expansion at middle, behind which it is rapidly attenuate and does not reach the apex; also on each elytron two small discal longitudinal spots arranged transversely, the inner of which may or may not coalesce with the median expansion of the sutural stripe. Clypeal margin not advanced beyond the sides of the front, truncate, with very narrow membranous border; clypeal suture strongly impressed. Antennae with 3rd joint slender and elongate, 7th and 8th subequal. Hind angles of thorax rather sharply defined, subrectangular, their vertices narrowly rounded. Entire upper surface finely and sparsely punctate, the elytra a little less obscurely so; sutural stria wanting. Metasternum alutaceous, with a few fine punctures. The tarsal formula of the male is 5-5-4, and of the female 4-4-4. Length (contracted) about 2 mm.

This species was described by Mr. W. J. Brown (Can. Ent., 1928, p. 145) from five specimens including both sexes, all taken at Victoria, British Columbia, April 11, 1921 (W. Downes). Mr. Brown writes me "I find no trace of a fovea, but at the middle of

the metasternum is a transverse row of bristles. This row contains nine or ten bristles and its length is subequal to one-third the length of the metasternum on the median line." No mention is made in his description of any modification of the left mandible in the male and it is to be presumed none such is present.

In the material before me there are five examples of this species, three from Olympia, Washington, sent by Mr. Liebeck, and two females in my own collection, one from Goldstream, Vancouver Island (very near the type locality), the other from Madison, Washington. Two of Mr. Liebeck's specimens are males and in one of them I find the transverse row of bristles occupying a feebly eroded line on the metasternum, and in addition the left mandible is armed with a long slender curved horn. In the other male the horn is lacking. This is probably only another and very striking instance of that variability in the development of the mandibular horn which is referred to by Horn in his paper under *A. politum*, where he also alludes to a male of *A. pulchrum* in his collection in which the mandibles do not differ from those in the female.

In color and markings *maculosum* is strongly suggestive of *pulchrum*, but in the latter the pattern is a little different, and the unimpressed clypeal suture, broadly rounded hind angles of the thorax and presence of a sutural stria at once make the separation easy.

*A. maculosum* var. **franciscanum** var. nov.

Around San Francisco Bay there occurs a variety of this species which while perfectly in accord in all essential features, differs so constantly in one or two respects from the typical northern form as to merit a distinctive name.

In Brown's description of *maculosum* he says of the elytra—"disk without trace of striae," and this is substantially true of all the northern specimens seen. In them the elytral punctures are distributed without order over the whole surface though somewhat less distinct towards the sides. In *franciscanum* the elytral punctures are much fewer and still finer and nearly all contained in about four discal linear series, the inner one longest but reaching neither base nor apex, the elytra in more than outer half absolutely impunctate. Furthermore there is in *franciscanum* a narrow piceous stripe along the outer margin of the elytra, this not attaining the apex but continued along the oblique base above the humeral angle. In typical *maculosum* this dark marginal stripe is either entirely lacking or only vaguely indicated. The sexual characters are precisely as in the typical form, the mandibular horn, as in the latter, being sometimes present but more often wanting.



All specimens of this form that I have seen were submitted by Mr. Henry Dietrich, who took them at Berkeley and in Marin Co., California, January, 1920. They bore the name *A. pulchrum* and specimens may have been distributed as such by Mr. Dietrich. The type is a horned male from Berkeley and bears date Jan. 8, 1920.

**Agathidium temporale n. sp.**

Oval, a little elongate, moderately strongly convex; color throughout black or piceous, the antennae and legs only slightly less dark. Clypeus a little retracted and with a more or less obvious membranous border; clypeal suture not impressed. Head with distinct tempora, which however are rather short and of equal prominence with the eyes. Antennal stem dark rufous, the club piceous; 3rd joint gradually widened and distinctly longer than the 2nd but scarcely as long as the next two; stem bristling with numerous erect hairs. Upper surface moderately shining and exhibiting a relatively dense dual system of punctulation, consisting of fine punctures intermixed with still more minute ones, this sculpture being most evident on the elytra. Hind angles of thorax somewhat defined but with their vertices rounded. Elytra distinctly longer than wide; humeral angles well defined and obtuse; sutural stria reaching more than half way to base, moderately strongly impressed. Metasternum finely alutaceous and sparsely punctulate.

Length (not much extended) nearly 3 mm.

Described from a single male specimen taken at Randolph, New Hampshire (Sept.), by Mr. John D. Sherman, Jr., but now in the Blanchard collection at Cambridge, Mass. The type is a male with a long curved horn arising from the left mandible; there is an ante-median metasternal fovea from which rises a tuft of erect hairs, and the pro- and mesotarsi are distinctly dilated basally.

With the above type, which remains in the Blanchard collection, I have placed with some confidence an entirely rufotestaceous female which agrees in all essentials except that the punctuation is somewhat less dense and the minute punctules less evident. This specimen was collected by Mr. Blanchard himself at North Conway, New Hampshire, (June), and is in his collection.

This species by its distinct tempora and the character of the punctuation shows an unmistakable affinity with *angulare*, and with that alone, but differs therefrom in the modified left mandible of the male.

**Agathidium assimile** n. sp.

Oval, rather strongly convex, piceous black, above very strongly shining, surface polished; head and thorax sparsely very finely to almost impunctate, elytra less sparsely and quite strongly distinctly punctate. Antennae dark rufous, club piceous, stem bristling with erect hairs on the lower side; 3rd joint moderately elongate triangular, 7th not wider than the 8th. Clypeal margin a little retracted and with membranous border; clypeal suture not impressed. Head with evident post-ocular tempora. Elytra a little longer than wide, humeral angle fairly distinct but with rounded vertex, sutural stria moderate. Metasternum alutaceous, unusually densely and strongly punctate except for a small area each side along the rear margin.

In the male the left mandible is armed with a short acute triangular horn, the four anterior tarsi are moderately dilated, and there is a rounded setiferous ante-median metasternal fovea.

Length 2.25 to 2.5 mm.

Described from a male specimen taken at Indianapolis, Indiana, 7-14-10, with which I confidently associate a male and two females in the Blanchard collection, all bearing label "Mt. Washington, N. H., subalpine, 7-4-96." In these latter the pronotal punctures are a little more evident but variable among themselves, and the elytral punctures are somewhat less sparse. In the male the left mandible is armed with a long erect horn; the female tarsal formula is 5-4-4.

In its close and conspicuous metasternal punctuation this species alone closely parallels *alticola*, a species oddly enough also taken by Mr. Blanchard in the White Mountains on the same collecting trip, its label differing only in having a three days earlier date. Notwithstanding this coincidence and the further fact that the two species are identical in size, form and punctuation, *alticola* differs decisively by its entirely rufous antennae with nearly cylindrical third joint, the impressed clypeal suture, lack of tempora, and simple left mandible in the male.

**Agathidium mollinum** n. sp.

Broadly oval, strongly convex, black, highly polished; head and thorax nearly or quite impunctate, elytra very finely sparsely punctulate, the punctures in part subserially arranged. Legs and antennae brownish, the latter with the club somewhat darker. Head with distinct tempora; clypeal margin retracted and with narrow membranous border;

clypeal suture detectable but not impressed. Hind angles of thorax broadly rounded. Elytra slightly longer than wide; humeral angle well marked, a little obtuse; sutural stria moderate. Metasternum alutaceous and sparsely punctulate.

Length 1.75 mm. or slightly more.

Three examples of this rather small species are before me, all from the Blanchard collection. The type is a male labeled "White Mts., N. H., woods." In it the left mandible is a little stouter and somewhat prolonged but without horn. The other two examples are also males and were collected by Blanchard at "Rangeley Lake, Maine, Aug. '94." In neither of these is the left mandible either horned or distinctly prolonged, but in both the mandibles are more prominent than is usual in females, and in one of them the left mandible is a little larger than the right. Type in the Blanchard collection; paratype in my collection.

*Agathidium pulchrum* Lec.

This is one of the best known and most easily recognized species in our fauna. Only one other species—*maculosum* Brown—shares the distinction of possessing a variegated surface of yellowish or reddish and black markings, and these two species are instantly separable by the lack in *maculosum* and the presence in *pulchrum* of a sutural stria. The general character of the elytral markings is indicated in the tabular synopsis, but there is so much individual variation that hardly any two examples are completely identical in this respect.

The form is broadly oval, the surface shining and finely and sparsely but perceptibly punctulate. The antennae are dark rufous basally, joints 7–10 piceous, the terminal joint paler. Clypeus distinctly retracted with evident membranous border; clypeal suture not impressed. Hind angles of thorax rather broadly rounded. Metasternum alutaceous and sparsely punctulate. Tarsal formula of female 5-4-4.

Length 2 to 3 mm.

Localities represented in the material before me are: Alameda Co., Santa Cruz, Kaweah, Pasadena and Pomona, all in California; and a single example from the White Mountains, New Hampshire. Horn gives also Kentucky (Dury). My White Mts. example is a male with setiferous metasternal fovea; it is more minutely punctulate than the California specimens and the terminal joint of the antennal club is not paler, but seems not to differ otherwise. Horn

alludes to the variability in the structure of the left mandible of the male, and the fact that in one male before him the mandibles differ in no way from those of the female.

*Agathidium picipes* n. sp.

Broadly oval, strongly convex, black or piceous, the antennae and legs concolorous except the tarsi, which are brownish. Clypeal margin a little retracted and with membranous border; clypeal suture not impressed. Upper surface polished, head and thorax minutely obsolete punctulate, elytra sparsely and finely but more perceptibly so. Side margins of thorax nearly straight, the hind angles indicated and a little obtuse, their vertices rounded. Elytra nearly as wide as long; humeral angle a little obtuse, rather well defined; sutural stria moderate. Metasternum finely alutaceous at sides, smoother at middle, sparsely punctulate. In the male the left mandible is armed with a moderately long acute horn, and the metasternum bears an ante-median transverse scratch from which arises a row of fine erect hairs.

Length 1.75 to 2 mm.

Described from a single pair from California. The male type bears label Santa Cruz Co., VI; the female is from Santa Clara Co.

It is an almost invariable rule in this genus that in the dark colored species the antennae and legs are some shade of brown or reddish brown; the present species however is notable in having the the appendages black or nearly so.

*Agathidium difforme* Lec.

Oval, a little more elongate than usual, strongly convex but only weakly contractile. Color an obscure brownish red, the pronotal disk, a scutellar or sutural triangle of variable extent, antennal club and metasternum, piceous. Upper surface strongly shining, the head finely but unusually distinctly punctate, thorax more finely and obscurely so, the elytra more strongly punctate and showing a more or less evident tendency toward a linear arrangement of the punctures, especially toward the suture. Clypeus truncate, with or without an evident membranous border; clypeal suture not impressed. Antennal stem rufous, the club piceous, 3rd joint elongate, 7th and 8th moderately transverse and subequal. Hind angles of thorax a little obtuse and rather sharply defined. Elytra perceptibly longer than wide, humeral angle distinct, a little obtuse; scutellar stria moderate. Mesosternum with an erect transverse laminiform process just before the middle coxae. Metasternum finely



alutaceous at sides, smooth at middle, sparsely punctate; in the male with a distinct transverse erosion bearing short erect hairs. Left mandible of male with a long curved horn. Tarsal formula of the male 5-5-4, of the female 5-4-4.

Length (body fully extended) about 2 mm.

Le Conte's type of this species is a male from Lake Superior. With it in his collection is a female from Detroit, Michigan. In addition to these specimens I have seen only two others, a male from Mt. Seward, 4500 ft., in the Adirondaek Mts., in Mr. Liebeck's collection, and a female from the White Mts., New Hampshire, in the Blanchard collection. These all agree in the characteristic type of coloration but vary somewhat in the extent of the dark sutural triangle. The erect mesosternal lamina at the anterior limits of the mesocoxal process is in every way similar to the structure shown in *bistriatum* and *sexstriatum*, and in all three species the mesocoxal process is more nearly horizontal than usual.

There can be no doubt that the *A. canadensis* recently described by Mr. W. J. Brown (Can. Ent. 1930, p. 89) is identical with *difforme* Lec., of which it possesses every essential feature. The only apparent discrepancy is in respect to the membranous border of the clypeus. This is said to be present in *difforme* and absent in *canadensis*; I have shown however that this is an uncertain character, subject to much variation in this and other species.